UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,348	04/02/2001	Alexander J. Pasadyn	2000.058100	9339

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EXAMINER
PRETLOW, DEMETRIUS R

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<table>
<tr>
<td rowspan="2">Office Action Summary</td>
<td>Application No.</td>
<td>Applicant(s)</td>
<td></td>
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<tr>
<td>09/824,348</td>
<td>PASADYN ET AL.</td>
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<td>Examiner</td>
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<td>Demetrius R. Pretlow</td>
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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _02 April 2001_.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-7,9-30_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _3-5,14-16,30_ is/are allowed.

6)☐ Claim(s) _1,2,6,7,9-13 and 17-23_ is/are rejected.

7)☒ Claim(s) _3,24,26,9-11_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

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Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 5,24, 26 and 9-11 are objected to because of the following informalities:

It appears that claims 9-11 should depend from claim 1 or 3. Appropriate

correction is required.

In claim 5, line 1, it appears that --4—should be changed to --3-- .

In claim 24, line 1, it appears that --2—should be changed to –1-- .

In claim 26, line 1, it appears that –25-- should be changed to –1-- .

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 19 rejected under 35 U.S.C. 102(e) as being anticpated by Nicholson.

Nicholson teach a plurality of tools for processing manufactured items in a

process flow. Note Nicholson et al. column 2, lines 56-60. Nicholson teach a database

(118) adapted to store a set of production environment data associated with each of the

manufactured items. Note Nicholson et al. column 2, lines 56-61. Nicholson teach a drift

monitor (100) to identify manufactured items associated with a process drift. Note

Nicholson column 6, lines 4-7. Nicholson teach a plurality of characteristic threads

based on the production environment data. Nicholson does not explicitly teach generate

however that would be inherent to the invention of Nicholson. Note Nicholson column 3,

lines 8-35. Nicholson teach a weight value is assigned to each lot in the lot list.

Typically, the wafer lots without the failure signature are assigned negative weight

values, such as -1, and the wafer lots having the failure signature are assigned positive

weight values, which suggests comparing the characteristic threads for at least those

manufactures items associated with the process drift. Note Nicholson column 4, lines 7-

23. Nicholson teach determining at least one potential cause for the process drift based

on the comparison of the characteristic threads. Note Nicholson column 4, lines 24-40.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1,2,6,7,9-13,17,18,20-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Nicholson (US 6,580,960) in view of Milor et al. Nicholson

teach processing s plurality of manufactured items in a process flow. Note

Nicholson column 2, lines 37-44. Nicholson teach storing a set of production

environment data associated with each of the manufactured items. Note

Nicholson column 2, lines 56-60. Nicholson teach identifying manufactured items

associated with a process drift. Note Nicholson column 6, lines 4-7. Nicholson

teach a plurality of characteristic threads based on the production environment

data. Nicholson does not explicitly teach the step of generating however this step

would be inherent to the process of Nicholson. Note Nicholson column 3, lines 8-

35. Nicholson teach a weight value is assigned to each lot in the lot list. Typically,

the wafer lots without the failure signature are assigned negative weight values,

such as -1, and the wafer lots having the failure signature are assigned positive

weight values, which suggests comparing the characteristic threads for at least

those manufactures items associated with the process drift. Note Nicholson

column 4, lines 7-23. Nicholson teach determining at least one potential cause

for the process drift based on the comparison of the characteristic threads. Note

Nicholson column 4, lines 24-40.

Nicholson does not teach at least one of the characteristic threads being associated

with other than processing tools used in the process flow.

Milor et al. teach at least one of the characteristic threads being associated with

other than processing tools used in the process flow. Note Milor et al. column 5, lines 8-

25.

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to modify the invention of Nicholson to include the teaching of Milor

et al. because it would allow diagnosing defects that impact the topography of an

integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

In reference to claim 2, Nicholson teach all of the limitations above.

Nicholson does not teach grouping the characteristic threads into characteristic categories.

Milor et al. teach grouping the characteristic threads into characteristic categories. Note Milor et al. column 2, lines 48-62.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Nicholson in view of Milor et al. because it would allow the number of feasible defect causes to be narrowed down. Note Milor et al. column 2, lines 40-44.

In reference to claim 23, Nicholson teach means for processing a plurality of manufactured items in a process flow. Note Nicholson column 2, lines 45-51. Means for storing a set of production environment data (118) associated with each of the manufactured items. Note Nicholson column 2, lines 56-60. Nicholson teach means for identifying manufactures items associated with the process drift. Note Nicholson claim 6, lines 5-9. Nicholson teach a plurality of characteristic threads based on the production environment data. Nicholson does not explicitly teach generate, however that would be inherent to the invention of Nicholson. Note Nicholson column 3, lines 8-35. Nicholson teach a weight value is assigned to each lot in the lot list. Typically, the wafer lots without the failure signature are assigned negative weight values, such as -1, and the wafer lots having the failure signature are assigned positive weight values, which suggests comparing the characteristic threads for at least those manufactures items associated with the process drift. Note Nicholson column 4, lines 7-23. Nicholson

teach means for determining at least one potential cause for the process drift based on the comparison of the characteristic threads. Note Nicholson column 4, lines 24-40.

Nicholson does not teach at least one of the characteristic threads being associated with other than processing tools used in the process flow.

Milor et al. teach at least one of the characteristic threads being associated with other than processing tools used in the process flow. Note Milor et al. column 5, lines 8-25.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Nicholson to include the teaching of Milor et al. because it would allow diagnosing defects that impact the topography of an integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

In reference to claim 6, Nicholson teach processing the plurality of manufactured items in the process flow comprises processing a plurality of semiconductor wafers in a semiconductor device during manufacturing process flow. Note Nicholson column 2, lines 45-47.

In reference to claim 7 Nicholson teach processing the plurality of semiconductor wafers into lots of wafers, an identifying the manufactured associated with the process drift comprises identifying particular lots of wafers associated with the process drift. Note Nicholson column 4, lines 7-24.

In reference to claim 9, Nicholson teach generating characteristic threads for metrology tools used to measure characteristics of semiconductor wafers in the process flow. Note column 2, lines 63-67 and column 3, lines 1-7.

In reference to claim 10, Nicholas does not teach generating characteristic threads based on incoming characteristics of semiconductor wafers in the process flow.

Milor et al. teach generating characteristic threads based on incoming characteristics of semiconductor wafers in the process flow. Note column 4, lines 37-48.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Nicholson to include the teaching of Milor et al. because it would allow diagnosing defects that impact the topography of an integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

In reference to claim 11, Nicholas does not teach generating characteristic threads based on operating recipe parameters used for processing semiconductor wafers in the process flow.

Milor et al. teach generating characteristic threads based on operating recipe parameters used for processing semiconductor wafers in the process flow. Note Milor column 4, lines 37-48.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Nicholson to include the teaching of Milor et al. because it would allow diagnosing defects that impact the topography of an integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

In reference to claim 12, Nicholson teach a plurality of tools for processing manufactured items in a process flow. Note Nicholson et al. column 2, lines 56-60.

Nicholson teach a database (118) adapted to store a set of production environment data

associated with each of the manufactured items. Note Nicholson et al. column 2, lines

56-61. Nicholson teach a drift monitor (100) to identify manufactured items associated

with a process drift. Note Nicholson column 6, lines 4-7. Nicholson teach a plurality of

characteristic threads based on the production environment data. Nicholson does not

explicitly teach generate however that would be inherent to the invention of Nicholson.

Note Nicholson column 3, lines 8-35. Nicholson teach a weight value is assigned to

each lot in the lot list. Typically, the wafer lots without the failure signature are assigned

negative weight values, such as -1, and the wafer lots having the failure signature are

assigned positive weight values, which suggests comparing the characteristic threads

for at least those manufactures items associated with the process drift. Note Nicholson

column 4, lines 7-23. Nicholson teach determining at least one potential cause for the

process drift based on the comparison of the characteristic threads. Note Nicholson

column 4, lines 24-40.

Nicholson does not teach at least one characteristic threads being associated

with other than the processing tools in the process flow.

Milor et al. teach at least one of the characteristic threads being associated with

other than processing tools used in the process flow. Note Milor et al. column 5, lines 8-

25.

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to modify the invention of Nicholson to include the teaching of Milor

et al. because it would allow diagnosing defects that impact the topography of an integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

In reference to claim 13, Nicholson teach grouping the characteristic threads into characteristic categories. Note column 4, lines 17-35.

In reference to claim 17, Nicholson teach semiconductor wafers processed in a semiconductor device manufacturing process flow. Note Nicholson column 2, lines 46-48.

In reference to claim 18, Nicholson teach the semiconductor wafers are grouped into lots of wafers, and the drift monitor is adapted to and identify particular lots of wafers associated withy the process drift. Note Nicholson column 2, lines 33-37.

In reference to claim 20, Nicholson teach generating characteristic threads for metrology tools used to measure characteristics of semiconductor wafers in the process flow. Note column 2, lines 63-67 and column 3, lines 1-7.

In reference to claim 21, Nicholas does not teach generating characteristic threads based on incoming characteristics of semiconductor wafers in the process flow.

Milor et al. teach generating characteristic threads based on incoming characteristics of semiconductor wafers in the process flow. Note column 4, lines 37-48.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Nicholson to include the teaching of Milor et al. because it would allow diagnosing defects that impact the topography of an integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

In reference to claim 22, Nicholas does not teach generating characteristic threads based on operating recipe parameters used for processing semiconductor wafers in the process flow.

Milor et al. teach generating characteristic threads based on operating recipe parameters used for processing semiconductor wafers in the process flow. Note Milor column 4, lines 37-48.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Nicholson to include the teaching of Milor et al. because it would allow diagnosing defects that impact the topography of an integrated circuit wafer surface. Note Milor et al. column 2, lines 33-35.

Allowable Subject Matter

Claims 24-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3-5,14-16,30 allowed.

Response to Arguments

Applicant's arguments with respect to claims 1,12,23 have been considered but are moot in view of the new ground(s) of rejection. Applicant argues that the previous cited art does not teach at least one characteristic threads being associated with other

than processing tools used in the process flow. Milor is cited for teaching at least one

characteristic threads being associated with other than processing tools used in the

process flow. Note rejection above.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Demetrius R. Pretlow whose telephone number is (703)

272-2278. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Barlow can be reached on (703) 272-2269. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Demetrius R. Pretlow

Patent Examiner

MICHAEL NGHIEM
PRIMARY EXAMINER